SEQUENCE LISTING

<110> Sharma, Satish Kumar
       Rank, Kenneth Bruce

<120> SOLUBLE NOTCH-BASED SUBSTRATES FOR GAMMA SECRETASE AND METHODS AND
COMPOSITIONS FOR USING SAME

<130> PC27514A

<140> 10/717,244

<141> 2003-11-19

<160> 14

<170> PatentIn version 3.1

<210> 1
<211> 2190
<212> DNA
<213> Artificial sequence

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<223> DNA encoding synthetic fusion of notch and nus

<400> 1

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caagagatcg acgtccgcgt acagatcgat cgcaaaagcg gtgattttga cactttccgt     180

cgctggttag ttgttgatga agtcacccag ccgaccaagg aaatcaccct tgaagccgca     240

cgttatgaag atgaaagcct gaacctgggc gattacgttg aagatcagat tgagtctgtt     300

acctttgacc gtatcactac ccagacggca aaacaggtta tcgtgcagaa agtgcgtgaa     360

gccgaacgtg cgatggtggt tgatcagttc cgtgaacacg aaggtgaaat catcaccggc     420

gtggtgaaaa aagtaaaccg cgacaacatc tctctggatc tgggcaacaa cgctgaagcc     480

gtgatcctgc gcgaagatat gctgccgcgt gaaaacttcc gccctggcga ccgcgttcgt     540

ggcgtgctct attccgttcg cccggaagcg cgtggcgcgc aactgttcgt cactcgttcc     600

aagccggaaa tgctgatcga actgttccgt attgaagtgc agaaatcgg cgaagaagtg     660

attgaaatta aagcagcggc tcgcgatccg ggttctcgtg cgaaaatcgc ggtgaaaacc     720

aacgataaac gtatcgatcc ggtaggtgct tgcgtaggta tgcgtggcgc gcgtgttcag     780

gcggtgtcta ctgaactggg tggcgagcgt atcgatatcg tcctgtggga tgataacccg     840

gcgcagttcg tgattaacgc aatggcaccg gcagacgttg cttctatcgt ggtggatgaa     900

gataaacaca ccatggacat cgccgttgaa gccggtaatc tggcgcaggc gattggccgt     960

aacggtcaga acgtgcgtct ggcttcgcaa ctgagcggtt gggaactcaa cgtgatgacc    1020

gttgacgacc tgcaagctaa gcatcaggcg gaagcgcacg cagcgatcga caccttcacc    1080
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aaatatctcg acatcgacga agacttcgcg actgttctgg tagaagaagg cttctcgacg      1140

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ccgaccgttg aagcactgcg cgagcgtgct aaaaatgcac tggccaccat tgcacaggcc      1260

caggaagaaa gcctcggtga taacaaaccg gctgacgatc tgctgaacct tgaagggggta      1320

gatcgtgatt tggcattcaa actggccgcc cgtggcgttt gtacgctgga agatctcgcc      1380

gaacagggca ttgatgatct ggctgatatc gaagggttga ccgacgaaaa agccggagca      1440

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catcaccatc accatcactc cgcgggtaaa gaaaccgctg ctgcgaaatt tgaacgccag      1560

cacatggact cgccaccgcc aactggtctg gtcccccggg gcagcgcggg ttctggtacg      1620

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attgaggccg tgaagagtga gccggtggag cctccgctgc cctcgcagct gcacctcatg      1740

tacgtggcag cggccgcctt cgtgctcctg ttctttgtgg gctgtggggt gctgctgtcc      1800

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gccagcaaga agaagcggag agagcccctc ggcgaggact cagtcggcct caagcccctg      1920

aagaatgcct cagatggtgc tctgatggac gacaatcaga acgagtgggg agacgaagac      1980

ctggagacca agaagttccg gtttgaggag ccagtagttc tccctgacct gagtgatcag      2040

actgaccaca gacagtggac ccagcagcac ctggacgctg ctgacctgcg catgtctgcc      2100

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<210> 2
<211> 729
<212> PRT
<213> Artificial sequence

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<223> Synthetic fusion protein sequence of notch and nus

<400> 2

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Ala Leu Pro Arg Glu Lys Ile Phe Glu Ala Leu Glu Ser Ala Leu Ala
            20                  25                  30


Thr Ala Thr Lys Lys Lys Tyr Glu Gln Glu Ile Asp Val Arg Val Gln
        35                  40                  45


Ile Asp Arg Lys Ser Gly Asp Phe Asp Thr Phe Arg Arg Trp Leu Val
    50                  55                  60
```

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Val Asp Glu Val Thr Gln Pro Thr Lys Glu Ile Thr Leu Glu Ala Ala
65                  70              75                      80

Arg Tyr Glu Asp Glu Ser Leu Asn Leu Gly Asp Tyr Val Glu Asp Gln
                85              90                  95

Ile Glu Ser Val Thr Phe Asp Arg Ile Thr Thr Gln Thr Ala Lys Gln
                100             105             110

Val Ile Val Gln Lys Val Arg Glu Ala Glu Arg Ala Met Val Val Asp
            115             120             125

Gln Phe Arg Glu His Glu Gly Glu Ile Ile Thr Gly Val Val Lys Lys
    130             135             140

Val Asn Arg Asp Asn Ile Ser Leu Asp Leu Gly Asn Asn Ala Glu Ala
145             150             155                     160

Val Ile Leu Arg Glu Asp Met Leu Pro Arg Glu Asn Phe Arg Pro Gly
            165             170             175

Asp Arg Val Arg Gly Val Leu Tyr Ser Val Arg Pro Glu Ala Arg Gly
            180             185             190

Ala Gln Leu Phe Val Thr Arg Ser Lys Pro Glu Met Leu Ile Glu Leu
    195             200             205

Phe Arg Ile Glu Val Pro Glu Ile Gly Glu Glu Val Ile Glu Ile Lys
    210             215             220

Ala Ala Ala Arg Asp Pro Gly Ser Arg Ala Lys Ile Ala Val Lys Thr
225             230             235             240

Asn Asp Lys Arg Ile Asp Pro Val Gly Ala Cys Val Gly Met Arg Gly
            245             250             255

Ala Arg Val Gln Ala Val Ser Thr Glu Leu Gly Gly Glu Arg Ile Asp
            260             265             270

Ile Val Leu Trp Asp Asp Asn Pro Ala Gln Phe Val Ile Asn Ala Met
    275             280             285

Ala Pro Ala Asp Val Ala Ser Ile Val Val Asp Glu Asp Lys His Thr
    290             295             300

Met Asp Ile Ala Val Glu Ala Gly Asn Leu Ala Gln Ala Ile Gly Arg
305             310             315             320

Asn Gly Gln Asn Val Arg Leu Ala Ser Gln Leu Ser Gly Trp Glu Leu
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                325                      330                      335

Asn Val Met Thr Val Asp Asp Leu Gln Ala Lys His Gln Ala Glu Ala
            340             345             350

His Ala Ala Ile Asp Thr Phe Thr Lys Tyr Leu Asp Ile Asp Glu Asp
        355             360             365

Phe Ala Thr Val Leu Val Glu Glu Gly Phe Ser Thr Leu Glu Glu Leu
    370             375             380

Ala Tyr Val Pro Met Lys Glu Leu Leu Glu Ile Glu Gly Leu Asp Glu
385             390             395             400

Pro Thr Val Glu Ala Leu Arg Glu Arg Ala Lys Asn Ala Leu Ala Thr
            405             410             415

Ile Ala Gln Ala Gln Glu Glu Ser Leu Gly Asp Asn Lys Pro Ala Asp
            420             425             430

Asp Leu Leu Asn Leu Glu Gly Val Asp Arg Asp Leu Ala Phe Lys Leu
        435             440             445

Ala Ala Arg Gly Val Cys Thr Leu Glu Asp Leu Ala Glu Gln Gly Ile
    450             455             460

Asp Asp Leu Ala Asp Ile Glu Gly Leu Thr Asp Glu Lys Ala Gly Ala
465             470             475             480

Leu Ile Met Ala Ala Arg Asn Ile Cys Trp Phe Gly Asp Glu Ala Thr
            485             490             495

Ser Gly Ser Gly His His His His His Ser Ala Gly Lys Glu Thr
            500             505             510

Ala Ala Ala Lys Phe Glu Arg Gln His Met Asp Ser Pro Pro Thr
        515             520             525

Gly Leu Val Pro Arg Gly Ser Ala Gly Ser Gly Thr Ile Asp Asp Asp
    530             535             540

Asp Lys Ser Pro Gly Ala Arg Gly Ser Glu Phe Asn Ile Pro Tyr Lys
545             550             555             560

Ile Glu Ala Val Lys Ser Glu Pro Val Glu Pro Pro Leu Pro Ser Gln
            565             570             575

Leu His Leu Met Tyr Val Ala Ala Ala Ala Phe Val Leu Leu Phe Phe
        580             585             590
```

Val Gly Cys Gly Val Leu Leu Ser Arg Lys Arg Arg Arg Gln His Gly
        595   600   605

Gln Leu Trp Phe Pro Glu Gly Phe Lys Val Ser Glu Ala Ser Lys Lys
    610   615   620

Lys Arg Arg Glu Pro Leu Gly Glu Asp Ser Val Gly Leu Lys Pro Leu
625   630   635   640

Lys Asn Ala Ser Asp Gly Ala Leu Met Asp Asp Asn Gln Asn Glu Trp
            645   650   655

Gly Asp Glu Asp Leu Glu Thr Lys Lys Phe Arg Phe Glu Glu Pro Val
        660   665   670

Val Leu Pro Asp Leu Ser Asp Gln Thr Asp His Arg Gln Trp Thr Gln
    675   680   685

Gln His Leu Asp Ala Ala Asp Leu Arg Met Ser Ala Met Ala Pro Thr
    690   695   700

Pro Pro Gln Gly Glu Val Asp Ala Asp Asp Tyr Lys Asp Asp Asp Asp
705   710   715   720

Lys His His His His His His His His
                725

<210>   3
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<212>   DNA
<213>   Artificial sequence

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<223>   Wildtype notch DNA sequence

<400>   3

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ggggtgctgc tgtcccgcaa gcgccggcgg cagcatggcc agctctggtt ccctgagggt   180

ttcaaagtgt cagaggccag caagaagaag cggagagagc ccctcggcga ggactcagtc   240

ggcctcaagc ccctgaagaa tgcctcagat ggtgctctga tggacgacaa tcagaacgag   300

tggggagacg aagacctgga gaccaagaag ttccggtttg aggagccagt agttctccct   360

gacctgagtg atcagactga ccacagacag tggacccagc agcacctgga cgctgctgac   420

ctgcgcatgt ctgccatggc cccaacaccg cctcaggggg aggtggatgc tgacgattat   480

aaagacgatg acgataaaca ccatcaccat caccatcacc attga   525

<210> 4
<211> 174
<212> PRT
<213> Artificial sequence

<220>
<223> Wildtype notch protein sequence

<400> 4

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Pro Leu Pro Ser Gln Leu His Leu Met Tyr Val Ala Ala Ala Ala Phe
            20   25   30

Val Leu Leu Phe Phe Val Gly Cys Gly Val Leu Leu Ser Arg Lys Arg
            35   40   45

Arg Arg Gln His Gly Gln Leu Trp Phe Pro Glu Gly Phe Lys Val Ser
    50   55   60

Glu Ala Ser Lys Lys Lys Arg Arg Glu Pro Leu Gly Glu Asp Ser Val
65   70   75   80

Gly Leu Lys Pro Leu Lys Asn Ala Ser Asp Gly Ala Leu Met Asp Asp
            85   90   95

Asn Gln Asn Glu Trp Gly Asp Glu Asp Leu Glu Thr Lys Lys Phe Arg
            100   105   110

Phe Glu Glu Pro Val Val Leu Pro Asp Leu Ser Asp Gln Thr Asp His
            115   120   125

Arg Gln Trp Thr Gln Gln His Leu Asp Ala Ala Asp Leu Arg Met Ser
    130   135   140

Ala Met Ala Pro Thr Pro Pro Gln Gly Glu Val Asp Ala Asp Asp Tyr
145   150   155   160

Lys Asp Asp Asp Asp Lys His His His His His His His His
                165   170

<210> 5
<211> 2531
<212> PRT
<213> Mus musculus

<400> 5

Met Pro Arg Leu Leu Thr Pro Leu Leu Cys Leu Thr Leu Leu Pro Ala
1   5   10   15

Arg Ala Ala Arg Gly Leu Arg Cys Ser Gln Pro Ser Gly Thr Cys Leu
        20   25   30

Asn Gly Gly Arg Cys Glu Val Ala Ser Gly Thr Glu Ala Cys Val Ala
        35   40   45

Ser Gly Ser Phe Val Gly Gln Arg Cys Gln Asp Pro Asn Pro Cys Leu
    50   55   60

Ser Thr Arg Cys Lys Asn Ala Gly Thr Cys Tyr Val Val Asp His Gly
65   70   75   80

Gly Ile Val Asp Tyr Ala Cys Ser Cys Pro Leu Gly Phe Ser Gly Pro
            85   90   95

Leu Cys Leu Thr Pro Leu Asp Lys Pro Cys Leu Ala Asn Pro Cys Arg
            100   105   110

Asn Gly Gly Thr Cys Asp Leu Leu Thr Leu Thr Glu Tyr Lys Cys Arg
        115   120   125

Cys Ser Pro Gly Trp Ser Gly Lys Ser Cys Gln Gln Ala Asp Pro Cys
    130   135   140

Ala Ser Asn Pro Cys Ala Asn Gly Gly Gln Cys Leu Pro Phe Glu Ser
145   150   155   160

Ser Tyr Ile Cys Arg Cys Pro Pro Gly Phe His Gly Pro Thr Cys Arg
            165   170   175

Gln Asp Val Asn Glu Cys Ser Gln Asn Pro Gly Leu Cys Arg His Gly
            180   185   190

Gly His Cys His Asn Glu Ile Gly Ser Tyr Arg Cys Ala Cys Cys Ala
        195   200   205

Thr His Thr Gly Pro His Cys Glu Leu Pro Tyr Val Pro Cys Ser Pro
    210   215   220

Ser Pro Cys Gln Asn Gly Ala Thr Cys Arg Pro Thr Gly Asp Thr Thr
225   230   235   240

His Glu Cys Ala Cys Leu Pro Gly Phe Ala Gly Gln Asn Cys Glu Glu
            245   250   255

Asn Val Asp Asp Cys Pro Gly Asn Asn Cys Lys Asn Gly Gly Ala Cys
            260   265   270

```
Val Asp Gly Val Asn Thr Tyr Asn Cys Arg Cys Pro Pro Glu Val Thr
        275                 280                 285

Gly Gln Tyr Cys Thr Glu Asp Val Asp Glu Cys Gln Leu Met Pro Asn
    290                 295                 300

Ala Cys Gln Asn Ala Gly Thr Cys His Asn Thr His Gly Gly Tyr Asn
305                 310                 315                 320

Cys Val Cys Val Asn Gly Trp Thr Gly Glu Asp Cys Ser Glu Asn Ile
            325                 330                 335

Asp Asp Cys Ala Ser Ala Ala Cys Phe Gln Gly Ala Thr Cys His Asp
        340                 345                 350

Arg Val Ala Ser Phe Tyr Cys Glu Cys Pro His Gly Arg Thr Gly Leu
    355                 360                 365

Leu Cys His Leu Lys His Ala Cys Ile Ser Asn Pro Cys Asn Glu Gly
    370                 375                 380

Ser Asn Cys Asp Thr Asn Pro Val Asn Gly Lys Arg Ile Cys Thr Cys
385                 390                 395                 400

Pro Ser Gly Tyr Thr Gly Pro Ala Cys Ser Gln Asp Val Asp Glu Cys
            405                 410                 415

Asp Leu Gly Ala Asn Arg Cys Glu His Ala Gly Lys Cys Leu Asn Thr
        420                 425                 430

Leu Gly Ser Phe Glu Cys Gln Cys Leu Gln Gly Tyr Thr Gly Pro Gly
    435                 440                 445

Cys Glu Ile Asp Val Asn Glu Cys Ile Ser Asn Pro Cys Gln Asn Asp
    450                 455                 460

Ala Thr Cys Leu Asp Gln Ile Gly Glu Phe Gln Cys Ile Cys Met Pro
465                 470                 475                 480

Gly Tyr Glu Gly Val Tyr Cys Glu Ile Asn Thr Asp Glu Cys Ala Ser
            485                 490                 495

Ser Pro Cys Leu His Asn Gly His Cys Met Asp Lys Ile His Glu Phe
        500                 505                 510

Gln Cys Gln Cys Pro Lys Gly Phe Asn Gly His Leu Cys Gln Tyr Asp
    515                 520                 525
```

Val Asp Glu Cys Ala Ser Thr Pro Cys Lys Asn Gly Ala Lys Cys Leu
   530   535   540

Asp Gly Pro Asn Thr Tyr Thr Cys Val Cys Thr Glu Gly Tyr Thr Gly
545   550   555   560

Thr His Cys Glu Val Asp Ile Asp Glu Cys Asp Pro Asp Pro Cys His
         565   570   575

Tyr Gly Ser Cys Lys Asp Gly Val Ala Thr Phe Thr Cys Leu Cys Gln
      580   585   590

Pro Gly Tyr Thr Gly His His Cys Glu Thr Asn Ile Asn Glu Cys His
     595   600   605

Ser Gln Pro Cys Arg His Gly Gly Thr Cys Gln Asp Arg Asp Asn Ser
   610   615   620

Tyr Leu Cys Leu Cys Leu Lys Gly Thr Thr Gly Pro Asn Cys Glu Ile
625   630   635   640

Asn Leu Asp Asp Cys Ala Ser Asn Pro Cys Asp Ser Gly Thr Cys Leu
         645   650   655

Asp Lys Ile Asp Gly Tyr Glu Cys Ala Cys Glu Pro Gly Tyr Thr Gly
      660   665   670

Ser Met Cys Asn Val Asn Ile Asp Glu Cys Ala Gly Ser Pro Cys His
      675   680   685

Asn Gly Gly Thr Cys Glu Asp Gly Ile Ala Gly Phe Thr Cys Arg Cys
   690   695   700

Pro Glu Gly Tyr His Asp Pro Thr Cys Leu Ser Glu Val Asn Glu Cys
705   710   715   720

Asn Ser Asn Pro Cys Ile His Gly Ala Cys Arg Asp Gly Leu Asn Gly
         725   730   735

Tyr Lys Cys Asp Cys Ala Pro Gly Trp Ser Gly Thr Asn Cys Asp Ile
      740   745   750

Asn Asn Asn Glu Cys Glu Ser Asn Pro Cys Val Asn Gly Gly Thr Cys
      755   760   765

Lys Asp Met Thr Ser Gly Tyr Val Cys Thr Cys Arg Glu Gly Phe Ser
   770   775   780

Gly Pro Asn Cys Gln Thr Asn Ile Asn Glu Cys Ala Ser Asn Pro Cys

Leu Asn Gln Gly Thr Cys Ile Asp Asp Val Ala Gly Tyr Lys Cys Asn
805 810 815

Cys Pro Leu Pro Tyr Thr Gly Ala Thr Cys Glu Val Val Leu Ala Pro
820 825 830

Cys Ala Thr Ser Pro Cys Lys Asn Ser Gly Val Cys Lys Glu Ser Glu
835 840 845

Asp Tyr Glu Ser Phe Ser Cys Val Cys Pro Thr Gly Trp Gln Gly Gln
850 855 860

Thr Cys Glu Val Asp Ile Asn Glu Cys Val Lys Ser Pro Cys Arg His
865 870 875 880

Gly Ala Ser Cys Gln Asn Thr Asn Gly Ser Tyr Arg Cys Leu Cys Gln
885 890 895

Ala Gly Tyr Thr Gly Arg Asn Cys Glu Ser Asp Ile Asp Asp Cys Arg
900 905 910

Pro Asn Pro Cys His Asn Gly Gly Ser Cys Thr Asp Gly Ile Asn Thr
915 920 925

Ala Phe Cys Asp Cys Leu Pro Gly Phe Gln Gly Ala Phe Cys Glu Glu
930 935 940

Asp Ile Asn Glu Cys Ala Ser Asn Pro Cys Gln Asn Gly Ala Asn Cys
945 950 955 960

Thr Asp Cys Val Asp Ser Tyr Thr Cys Thr Cys Pro Val Gly Phe Asn
965 970 975

Gly Ile His Cys Glu Asn Asn Thr Pro Asp Cys Thr Glu Ser Ser Cys
980 985 990

Phe Asn Gly Gly Thr Cys Val Asp Gly Ile Asn Ser Phe Thr Cys Leu
995 1000 1005

Cys Pro Pro Gly Phe Thr Gly Ser Tyr Cys Gln Tyr Asp Val Asn
1010 1015 1020

Glu Cys Asp Ser Arg Pro Cys Leu His Gly Gly Thr Cys Gln Asp
1025 1030 1035

Ser Tyr Gly Thr Tyr Lys Cys Thr Cys Pro Gln Gly Tyr Thr Gly
1040 1045 1050

Leu Asn Cys Gln Asn Leu Val Arg Trp Cys Asp Ser Ala Pro Cys
    1055   1060   1065

Lys Asn Gly Gly Arg Cys Trp Gln Thr Asn Thr Gln Tyr His Cys
    1070   1075   1080

Glu Cys Arg Ser Gly Trp Thr Gly Val Asn Cys Asp Val Leu Ser
    1085   1090   1095

Val Ser Cys Glu Val Ala Ala Gln Lys Arg Gly Ile Asp Val Thr
    1100   1105   1110

Leu Leu Cys Gln His Gly Gly Leu Cys Val Asp Glu Gly Asp Lys
    1115   1120   1125

His Tyr Cys His Cys Gln Ala Gly Tyr Thr Gly Ser Tyr Cys Glu
    1130   1135   1140

Asp Glu Val Asp Glu Cys Ser Pro Asn Pro Cys Gln Asn Gly Ala
    1145   1150   1155

Thr Cys Thr Asp Tyr Leu Gly Gly Phe Ser Cys Lys Cys Val Ala
    1160   1165   1170

Gly Tyr His Gly Ser Asn Cys Ser Glu Glu Ile Asn Glu Cys Leu
    1175   1180   1185

Ser Gln Pro Cys Gln Asn Gly Gly Thr Cys Ile Asp Leu Thr Asn
    1190   1195   1200

Ser Tyr Lys Cys Ser Cys Pro Arg Gly Thr Gln Gly Val His Cys
    1205   1210   1215

Glu Ile Asn Val Asp Asp Cys His Pro Pro Leu Asp Pro Ala Ser
    1220   1225   1230

Arg Ser Pro Lys Cys Phe Asn Asn Gly Thr Cys Val Asp Gln Val
    1235   1240   1245

Gly Gly Tyr Thr Cys Thr Cys Pro Pro Gly Phe Val Gly Glu Arg
    1250   1255   1260

Cys Glu Gly Asp Val Asn Glu Cys Leu Ser Asn Pro Cys Asp Pro
    1265   1270   1275

Arg Gly Thr Gln Asn Cys Val Gln Arg Val Asn Asp Phe His Cys
    1280   1285   1290

Glu Cys Arg Ala Gly His Thr Gly Arg Arg Cys Glu Ser Val Ile
    1295   1300   1305

Asn Gly Cys Arg Gly Lys Pro Cys Lys Asn Gly Gly Val Cys Ala
    1310   1315   1320

Val Ala Ser Asn Thr Ala Arg Gly Phe Ile Cys Arg Cys Pro Ala
    1325   1330   1335

Gly Phe Glu Gly Ala Thr Cys Glu Asn Asp Ala Arg Thr Cys Gly
    1340   1345   1350

Ser Leu Arg Cys Leu Asn Gly Gly Thr Cys Ile Ser Gly Pro Arg
    1355   1360   1365

Ser Pro Thr Cys Leu Cys Leu Gly Ser Phe Thr Gly Pro Glu Cys
    1370   1375   1380

Gln Phe Pro Ala Ser Ser Pro Cys Val Gly Ser Asn Pro Cys Tyr
    1385   1390   1395

Asn Gln Gly Thr Cys Glu Pro Thr Ser Glu Asn Pro Phe Tyr Arg
    1400   1405   1410

Cys Leu Cys Pro Ala Lys Phe Asn Gly Leu Leu Cys His Ile Leu
    1415   1420   1425

Asp Tyr Ser Phe Thr Gly Gly Ala Gly Pro Asp Ile Pro Pro Pro
    1430   1435   1440

Gln Ile Glu Glu Ala Cys Glu Leu Pro Glu Cys Gln Val Asp Ala
    1445   1450   1455

Gly Asn Lys Val Cys Asn Leu Gln Cys Asn Asn His Ala Cys Gly
    1460   1465   1470

Trp Asp Gly Gly Asp Cys Ser Leu Asn Phe Asn Asp Pro Trp Lys
    1475   1480   1485

Asn Cys Thr Gln Ser Leu Gln Cys Trp Lys Tyr Phe Ser Asp Gly
    1490   1495   1500

His Cys Asp Ser Gln Cys Asn Ser Ala Gly Cys Leu Phe Asp Gly
    1505   1510   1515

Phe Asp Cys Gln Leu Thr Glu Gly Gln Cys Asn Pro Leu Tyr Asp
    1520   1525   1530

Gln Tyr Cys Lys Asp His Phe Ser Asp Gly His Cys Asp Gln Gly
    1535   1540   1545

Cys Asn Ser Ala Glu Cys Glu Trp Asp Gly Leu Asp Cys Ala Glu
    1550   1555   1560

His Val Pro Glu Arg Leu Ala Ala Gly Thr Leu Val Leu Val Val
    1565   1570   1575

Leu Leu Pro Pro Asp Gln Leu Arg Asn Asn Ser Phe His Phe Leu
    1580   1585   1590

Arg Glu Leu Ser His Val Leu His Thr Asn Val Val Phe Lys Arg
    1595   1600   1605

Asp Ala Gln Gly Gln Gln Met Ile Phe Pro Tyr Tyr Gly His Glu
    1610   1615   1620

Glu Glu Leu Arg Lys His Pro Ile Lys Arg Ser Thr Val Gly Trp
    1625   1630   1635

Ala Thr Ser Ser Leu Leu Pro Gly Thr Ser Gly Gly Arg Gln Arg
    1640   1645   1650

Arg Glu Leu Asp Pro Met Asp Ile Arg Gly Ser Ile Val Tyr Leu
    1655   1660   1665

Glu Ile Asp Asn Arg Gln Cys Val Gln Ser Ser Ser Gln Cys Phe
    1670   1675   1680

Gln Ser Ala Thr Asp Val Ala Ala Phe Leu Gly Ala Leu Ala Ser
    1685   1690   1695

Leu Gly Ser Leu Asn Ile Pro Tyr Lys Ile Glu Ala Val Lys Ser
    1700   1705   1710

Glu Pro Val Glu Pro Pro Leu Pro Ser Gln Leu His Leu Met Tyr
    1715   1720   1725

Val Ala Ala Ala Ala Phe Val Leu Leu Phe Phe Val Gly Cys Gly
    1730   1735   1740

Val Leu Leu Ser Arg Lys Arg Arg Arg Gln His Gly Gln Leu Trp
    1745   1750   1755

Phe Pro Glu Gly Phe Lys Val Ser Glu Ala Ser Lys Lys Lys Arg
    1760   1765   1770

Arg Glu Pro Leu Gly Glu Asp Ser Val Gly Leu Lys Pro Leu Lys

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         1775                    1780                    1785

Asn Ala  Ser Asp Gly Ala Leu  Met Asp Asp Asn Gln  Asn Glu Trp
    1790                 1795                 1800

Gly Asp  Glu Asp Leu Glu Thr  Lys Lys Phe Arg Phe  Glu Glu Pro
    1805                 1810                 1815

Val Val  Leu Pro Asp Leu Ser  Asp Gln Thr Asp His  Arg Gln Trp
    1820                 1825                 1830

Thr Gln  Gln His Leu Asp Ala  Ala Asp Leu Arg Met  Ser Ala Met
    1835                 1840                 1845

Ala Pro  Thr Pro Pro Gln Gly  Glu Val Asp Ala Asp  Cys Met Asp
    1850                 1855                 1860

Val Asn  Val Arg Gly Pro Asp  Gly Phe Thr Pro Leu  Met Ile Ala
    1865                 1870                 1875

Ser Cys  Ser Gly Gly Gly Leu  Glu Thr Gly Asn Ser  Glu Glu Glu
    1880                 1885                 1890

Glu Asp  Ala Pro Ala Val Ile  Ser Asp Phe Ile Tyr  Gln Gly Ala
    1895                 1900                 1905

Ser Leu  His Asn Gln Thr Asp  Arg Thr Gly Glu Thr  Ala Leu His
    1910                 1915                 1920

Leu Ala  Ala Arg Tyr Ser Arg  Ser Asp Arg Arg Lys  Arg Leu Glu
    1925                 1930                 1935

Ala Ser  Ala Asp Ala Asn Ile  Gln Asp Asn Met Gly  Arg Thr Pro
    1940                 1945                 1950

Leu His  Ala Ala Val Ser Ala  Asp Ala Gln Gly Val  Phe Gln Ile
    1955                 1960                 1965

Leu Leu  Arg Asn Arg Ala Thr  Asp Leu Asp Ala Arg  Met His Asp
    1970                 1975                 1980

Gly Thr  Thr Pro Leu Ile Leu  Ala Ala Arg Leu Ala  Val Glu Gly
    1985                 1990                 1995

Met Leu  Glu Asp Leu Ile Asn  Ser His Ala Asp Val  Asn Ala Val
    2000                 2005                 2010

Asp Asp  Leu Gly Lys Ser Ala  Leu His Trp Ala Ala  Ala Val Asn
    2015                 2020                 2025
```

```
Asn Val  Asp Ala Ala Val Val  Leu Leu Lys Asn Gly  Ala Asn Lys
    2030             2035             2040

Asp Ile  Glu Asn Asn Lys Glu  Glu Thr Ser Leu Phe  Leu Ser Ile
    2045             2050             2055

Arg Arg  Glu Ser Tyr Glu Thr  Ala Lys Val Leu Leu  Asp His Phe
    2060             2065             2070

Ala Asn  Arg Asp Ile Thr Asp  His Met Asp Arg Leu  Pro Arg Asp
    2075             2080             2085

Ile Ala  Gln Glu Arg Met His  His Asp Ile Val Arg  Leu Leu Asp
    2090             2095             2100

Glu Tyr  Asn Leu Val Arg Ser  Pro Gln Leu His Gly  Thr Ala Leu
    2105             2110             2115

Gly Gly  Thr Pro Thr Leu Ser  Pro Thr Leu Cys Ser  Pro Asn Gly
    2120             2125             2130

Tyr Pro  Gly Asn Leu Lys Ser  Ala Thr Gln Gly Lys  Lys Ala Arg
    2135             2140             2145

Lys Pro  Ser Thr Lys Gly Leu  Ala Cys Gly Ser Lys  Glu Ala Lys
    2150             2155             2160

Asp Leu  Lys Ala Arg Arg Lys  Ser Ser Gln Asp Gly  Lys Gly Trp
    2165             2170             2175

Leu Leu  Asp Ser Ser Ser Ser  Met Leu Ser Pro Val  Asp Ser Leu
    2180             2185             2190

Glu Ser  Pro His Gly Tyr Leu  Ser Asp Val Ala Ser  His Pro Leu
    2195             2200             2205

Leu Pro  Ser Pro Phe Gln Gln  Ser Pro Ser Met Pro  Leu Ser His
    2210             2215             2220

Leu Pro  Gly Met Pro Asp Thr  His Leu Gly Ile Ser  His Leu Asn
    2225             2230             2235

Val Ala  Ala Lys Pro Glu Met  Ala Ala Leu Ala Gly  Gly Ser Arg
    2240             2245             2250

Leu Ala  Phe Glu His Pro Pro  Pro Arg Leu Ser His  Leu Pro Val
    2255             2260             2265
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Ala Ser  Ser Ala Cys Thr Val  Leu Ser Thr Asn Gly  Thr Gly Ala
    2270                 2275                 2280

Met Asn  Phe Thr Val Gly Ala  Pro Ala Ser Leu Asn  Gly Gln Cys
    2285                 2290                 2295

Glu Trp  Leu Pro Arg Leu Gln  Asn Gly Met Val Pro  Ser Gln Tyr
    2300                 2305                 2310

Asn Pro  Leu Arg Pro Gly Val  Thr Pro Gly Thr Leu  Ser Thr Gln
    2315                 2320                 2325

Ala Ala  Gly Leu Gln His Ser  Met Met Gly Pro Leu  His Ser Ser
    2330                 2335                 2340

Leu Ser  Thr Asn Thr Leu Ser  Pro Ile Ile Tyr Gln  Gly Leu Pro
    2345                 2350                 2355

Asn Thr  Arg Leu Ala Thr Gln  Pro His Leu Val Gln  Thr Gln Gln
    2360                 2365                 2370

Val Gln  Pro Gln Asn Leu Pro  Leu Gln Pro Gln Asn  Leu Gln Pro
    2375                 2380                 2385

Pro Ser  Gln Pro His Leu Ser  Val Ser Ser Ala Ala  Asn Gly His
    2390                 2395                 2400

Leu Gly  Arg Ser Phe Leu Ser  Gly Glu Pro Ser Gln  Ala Asp Val
    2405                 2410                 2415

Gln Pro  Leu Gly Pro Ser Ser  Leu Pro Val His Thr  Ile Leu Pro
    2420                 2425                 2430

Gln Glu  Ser Gln Ala Leu Pro  Thr Ser Leu Pro Ser  Ser Met Val
    2435                 2440                 2445

Pro Pro  Met Thr Thr Thr Gln  Phe Leu Thr Pro Pro  Ser Gln His
    2450                 2455                 2460

Ser Tyr  Ser Ser Ser Pro Val  Asp Asn Thr Pro Ser  His Gln Leu
    2465                 2470                 2475

Gln Val  Pro Glu Pro Thr Phe  Leu Thr Pro Ser Pro  Glu Ser Pro
    2480                 2485                 2490

Asp Gln  Trp Ser Ser Ser Ser  Pro His Ser Asn Ile  Ser Asp Trp
    2495                 2500                 2505
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Ser Glu Gly Ile Ser Ser Pro Pro Thr Thr Met Pro Ser Gln Ile
    2510   2515   2520

Thr His Ile Pro Glu Ala Phe Lys
    2525   2530

<210> 6
<211> 2444
<212> PRT
<213> Homo sapiens

<220>
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<222> (891)..(891)
<223> Xaa = Any or unknown amino acid

<220>
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<223> Xaa = Any or unknown amino acid

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<221> misc_feature
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<223> Xaa = Any or unknown amino acid

<400> 6

Met Pro Pro Leu Leu Ala Pro Leu Leu Cys Leu Ala Leu Leu Pro Ala
1   5   10   15

Leu Ala Ala Arg Gly Pro Arg Cys Ser Gln Pro Gly Glu Thr Cys Leu
            20   25   30

Asn Gly Gly Lys Cys Glu Ala Ala Asn Gly Thr Glu Ala Cys Val Cys
            35   40   45

Gly Gly Ala Phe Val Gly Pro Arg Cys Gln Asp Pro Asn Pro Cys Leu
    50   55   60

Ser Thr Pro Cys Lys Asn Ala Gly Thr Cys His Val Val Asp Arg Arg
65   70   75   80

Gly Val Ala Asp Tyr Ala Cys Ser Cys Ala Leu Gly Phe Ser Gly Pro
                85   90   95

Leu Cys Leu Thr Pro Leu Asp Asn Ala Cys Leu Thr Asn Pro Cys Arg
            100   105   110

Asn Gly Gly Thr Cys Asp Leu Leu Thr Leu Thr Glu Tyr Lys Cys Arg
            115   120   125

Cys Pro Pro Gly Trp Ser Gly Lys Ser Cys Gln Gln Ala Asp Pro Cys

```
            130                    135                    140

Ala Ser Asn Pro Cys Ala Asn Gly Gly Gln Cys Leu Pro Phe Glu Ala
145              150              155              160

Ser Tyr Ile Cys His Cys Pro Pro Ser Phe His Gly Pro Thr Cys Arg
                165              170              175

Gln Asp Val Asn Glu Cys Gly Gln Lys Pro Arg Leu Cys Arg His Gly
            180              185              190

Gly Thr Cys His Asn Glu Val Gly Ser Tyr Arg Cys Val Cys Arg Ala
        195              200              205

Thr His Thr Gly Pro Asn Cys Glu Arg Pro Tyr Val Pro Cys Ser Pro
    210              215              220

Ser Pro Cys Gln Asn Gly Gly Thr Cys Arg Pro Thr Gly Asp Val Thr
225              230              235              240

His Glu Cys Ala Cys Leu Pro Gly Phe Thr Gly Gln Asn Cys Glu Glu
        245              250              255

Asn Ile Asp Asp Cys Pro Gly Asn Asn Cys Lys Asn Gly Gly Ala Cys
            260              265              270

Val Asp Gly Val Asn Thr Tyr Asn Cys Pro Cys Pro Pro Glu Trp Thr
        275              280              285

Gly Gln Tyr Cys Thr Glu Asp Val Asp Glu Cys Gln Leu Met Pro Asn
    290              295              300

Ala Cys Gln Asn Gly Gly Thr Cys His Asn Thr His Gly Gly Tyr Asn
305              310              315              320

Cys Val Cys Val Asn Gly Trp Thr Gly Glu Asp Cys Ser Glu Asn Ile
            325              330              335

Asp Asp Cys Ala Ser Ala Ala Cys Phe His Gly Ala Thr Cys His Asp
        340              345              350

Arg Val Ala Ser Phe Tyr Cys Glu Cys Pro His Gly Arg Thr Gly Leu
        355              360              365

Leu Cys His Leu Asn Asp Ala Cys Ile Ser Asn Pro Cys Asn Glu Gly
    370              375              380

Ser Asn Cys Asp Thr Asn Pro Val Asn Gly Lys Ala Ile Cys Thr Cys
385              390              395              400
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```
Pro Ser Gly Tyr Thr Gly Pro Ala Cys Ser Gln Asp Val Asp Glu Cys
            405             410                 415

Ser Leu Gly Ala Asn Pro Cys Glu His Ala Gly Lys Cys Ile Asn Thr
            420             425                 430

Leu Gly Ser Phe Glu Cys Gln Cys Leu Gln Gly Tyr Thr Gly Pro Arg
            435             440             445

Cys Glu Ile Asp Val Asn Glu Cys Val Ser Asn Pro Cys Gln Asn Asp
    450             455             460

Ala Thr Cys Leu Asp Gln Ile Gly Glu Phe Gln Cys Met Cys Met Pro
465             470             475                 480

Gly Tyr Glu Gly Val His Cys Glu Val Asn Thr Asp Glu Cys Ala Ser
            485             490             495

Ser Pro Cys Leu His Asn Gly Arg Cys Leu Asp Lys Ile Asn Glu Phe
            500             505             510

Gln Cys Glu Cys Pro Thr Gly Phe Thr Gly His Leu Cys Gln Tyr Asp
    515             520             525

Val Asp Glu Cys Ala Ser Thr Pro Cys Lys Asn Gly Ala Lys Cys Leu
    530             535             540

Asp Gly Pro Asn Thr Tyr Thr Cys Val Cys Thr Glu Gly Tyr Thr Gly
545             550             555                 560

Thr His Cys Glu Val Asp Ile Asp Glu Cys Asp Pro Asp Pro Cys His
            565             570             575

Tyr Gly Ser Cys Lys Asp Gly Val Ala Thr Phe Thr Cys Leu Cys Arg
            580             585             590

Pro Gly Tyr Thr Gly His His Cys Glu Thr Asn Ile Asn Glu Cys Ser
            595             600             605

Ser Gln Pro Cys Arg Leu Arg Gly Thr Cys Gln Asp Pro Asp Asn Ala
    610             615             620

Tyr Leu Cys Phe Cys Leu Lys Gly Thr Thr Gly Pro Asn Cys Glu Ile
625             630             635                 640

Asn Leu Asp Asp Cys Ala Ser Ser Pro Cys Asp Ser Gly Thr Cys Leu
            645             650             655
```

Asp Lys Ile Asp Gly Tyr Glu Cys Ala Cys Glu Pro Gly Tyr Thr Gly
            660   665   670

Ser Met Cys Asn Ser Asn Ile Asp Glu Cys Ala Gly Asn Pro Cys His
        675   680   685

Asn Gly Gly Thr Cys Glu Asp Gly Ile Asn Gly Phe Thr Cys Arg Cys
    690   695   700

Pro Glu Gly Tyr His Asp Pro Thr Cys Leu Ser Glu Val Asn Glu Cys
705   710   715   720

Asn Ser Asn Pro Cys Val His Gly Ala Cys Arg Asp Ser Leu Asn Gly
            725   730   735

Tyr Lys Cys Asp Cys Asp Pro Gly Trp Ser Gly Thr Asn Cys Asp Ile
            740   745   750

Asn Asn Asn Glu Cys Glu Ser Asn Pro Cys Val Asn Gly Gly Thr Cys
    755   760   765

Lys Asp Met Thr Ser Gly Ile Val Cys Thr Cys Arg Glu Gly Phe Ser
    770   775   780

Gly Pro Asn Cys Gln Thr Asn Ile Asn Glu Cys Ala Ser Asn Pro Cys
785   790   795   800

Leu Asn Lys Gly Thr Cys Ile Asp Asp Val Ala Gly Tyr Lys Cys Asn
            805   810   815

Cys Leu Leu Pro Tyr Thr Gly Ala Thr Cys Glu Val Val Leu Ala Pro
            820   825   830

Cys Ala Pro Ser Pro Cys Arg Asn Gly Gly Glu Cys Arg Gln Ser Glu
            835   840   845

Asp Tyr Glu Ser Phe Ser Cys Val Cys Pro Thr Ala Gly Ala Lys Gly
    850   855   860

Gln Thr Cys Glu Val Asp Ile Asn Glu Cys Val Leu Ser Pro Cys Arg
865   870   875   880

His Gly Ala Ser Cys Gln Asn Thr His Gly Xaa Tyr Arg Cys His Cys
            885   890   895

Gln Ala Gly Tyr Ser Gly Arg Asn Cys Glu Thr Asp Ile Asp Asp Cys
            900   905   910

Arg Pro Asn Pro Cys His Asn Gly Gly Ser Cys Thr Asp Gly Ile Asn
    915   920   925

Thr Ala Phe Cys Asp Cys Leu Pro Gly Phe Arg Gly Thr Phe Cys Glu
    930   935   940

Glu Asp Ile Asn Glu Cys Ala Ser Asp Pro Cys Arg Asn Gly Ala Asn
945   950   955   960

Cys Thr Asp Cys Val Asp Ser Tyr Thr Cys Thr Cys Pro Ala Gly Phe
           965   970   975

Ser Gly Ile His Cys Glu Asn Asn Thr Pro Asp Cys Thr Glu Ser Ser
        980   985   990

Cys Phe Asn Gly Gly Thr Cys Val Asp Gly Ile Asn Ser Phe Thr Cys
    995   1000   1005

Leu Cys Pro Pro Gly Phe Thr Gly Ser Tyr Cys Gln His Val Val
   1010   1015   1020

Asn Glu Cys Asp Ser Arg Pro Cys Leu Leu Gly Gly Thr Cys Gln
   1025   1030   1035

Asp Gly Arg Gly Leu His Arg Cys Thr Cys Pro Gln Gly Tyr Thr
   1040   1045   1050

Gly Pro Asn Cys Gln Asn Leu Val His Trp Cys Asp Ser Ser Pro
   1055   1060   1065

Cys Lys Asn Gly Gly Lys Cys Trp Gln Thr His Thr Gln Tyr Arg
   1070   1075   1080

Cys Glu Cys Pro Ser Gly Trp Thr Gly Leu Tyr Cys Asp Val Pro
   1085   1090   1095

Ser Val Ser Cys Glu Val Ala Ala Gln Arg Gln Gly Val Asp Val
   1100   1105   1110

Ala Arg Leu Cys Gln His Gly Gly Leu Cys Val Asp Ala Gly Asn
   1115   1120   1125

Thr His His Cys Arg Cys Gln Ala Gly Tyr Thr Gly Ser Tyr Cys
   1130   1135   1140

Glu Asp Leu Val Asp Glu Cys Ser Pro Ser Pro Cys Gln Asn Gly
   1145   1150   1155

Ala Thr Cys Thr Asp Tyr Leu Gly Gly Tyr Ser Cys Lys Cys Val

Ala Gly Tyr His Gly Val Asn Cys Ser Glu Glu Ile Asp Glu Cys
    1175   1180   1185

Leu Ser His Pro Cys Gln Asn Gly Gly Thr Cys Leu Asp Leu Pro
    1190   1195   1200

Asn Thr Tyr Lys Cys Ser Cys Pro Arg Gly Thr Gln Gly Val His
    1205   1210   1215

Cys Glu Ile Asn Val Asp Asp Cys Asn Pro Pro Val Asp Pro Val
    1220   1225   1230

Ser Arg Ser Pro Lys Cys Phe Asn Asn Gly Thr Cys Val Asp Gln
    1235   1240   1245

Val Gly Gly Tyr Ser Cys Thr Cys Pro Pro Gly Phe Val Gly Glu
    1250   1255   1260

Arg Cys Glu Gly Asp Val Asn Glu Cys Leu Ser Asn Pro Cys Asp
    1265   1270   1275

Ala Arg Gly Thr Gln Asn Cys Val Gln Arg Val Asn Asp Phe His
    1280   1285   1290

Cys Glu Cys Arg Ala Gly His Thr Gly Arg Arg Cys Glu Ser Val
    1295   1300   1305

Ile Asn Gly Cys Lys Gly Lys Pro Cys Lys Asn Gly Gly Thr Cys
    1310   1315   1320

Ala Val Ala Ser Asn Thr Ala Arg Gly Phe Ile Cys Lys Cys Pro
    1325   1330   1335

Ala Gly Phe Glu Gly Ala Thr Cys Glu Asn Asp Ala Arg Thr Cys
    1340   1345   1350

Gly Ser Leu Arg Cys Leu Asn Gly Gly Thr Cys Ile Ser Gly Pro
    1355   1360   1365

Arg Ser Pro Thr Cys Leu Cys Leu Gly Pro Phe Thr Gly Pro Glu
    1370   1375   1380

Cys Gln Phe Pro Ala Ser Ser Pro Cys Leu Gly Gly Asn Pro Cys
    1385   1390   1395

Tyr Asn Gln Gly Thr Cys Glu Pro Thr Ser Glu Ser Pro Phe Tyr
    1400   1405   1410

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Arg Cys  Leu Cys Pro Ala Lys  Phe Asn Gly Leu Leu  Cys His Ile
    1415                1420                1425

Leu Asp  Tyr Ser Phe Gly Gly  Gly Ala Gly Arg Asp  Ile Pro Pro
    1430                1435                1440

Pro Leu  Ile Glu Glu Ala Cys  Glu Leu Pro Glu Cys  Gln Glu Asp
    1445                1450                1455

Ala Gly  Asn Lys Val Cys Ser  Leu Gln Cys Asn Asn  His Ala Cys
    1460                1465                1470

Gly Trp  Asp Gly Gly Asp Cys  Ser Leu Asn Phe Asn  Asp Pro Trp
    1475                1480                1485

Lys Asn  Cys Thr Gln Ser Leu  Gln Cys Trp Lys Tyr  Phe Ser Asp
    1490                1495                1500

Gly His  Cys Asp Ser Gln Cys  Asn Ser Ala Gly Cys  Leu Phe Asp
    1505                1510                1515

Gly Phe  Asp Cys Gln Arg Ala  Glu Gly Gln Cys Asn  Pro Leu Tyr
    1520                1525                1530

Asp Gln  Tyr Cys Lys Asp His  Phe Ser Asp Gly His  Cys Asp Gln
    1535                1540                1545

Gly Cys  Asn Ser Ala Glu Cys  Glu Trp Asp Gly Leu  Asp Cys Ala
    1550                1555                1560

Glu His  Val Pro Glu Arg Leu  Ala Ala Gly Thr Leu  Val Val Val
    1565                1570                1575

Val Leu  Met Pro Pro Glu Gln  Leu Arg Asn Ser Ser  Phe His Phe
    1580                1585                1590

Leu Arg  Glu Leu Ser Arg Val  Leu His Thr Asn Val  Val Phe Lys
    1595                1600                1605

Arg Asp  Ala His Gly Gln Gln  Met Ile Phe Pro Tyr  Tyr Gly Arg
    1610                1615                1620

Glu Glu  Glu Leu Arg Lys His  Pro Ile Lys Arg Ala  Ala Glu Gly
    1625                1630                1635

Trp Ala  Ala Pro Asp Ala Leu  Leu Gly Gln Val Lys  Ala Ser Leu
    1640                1645                1650
```

```
Leu Pro  Gly Gly Ser Glu Gly  Gly Arg Arg Arg Arg  Glu Leu Asp
    1655             1660             1665

Pro Met  Asp Val Arg Gly Ser  Ile Val Tyr Leu Glu  Ile Asp Asn
    1670             1675             1680

Arg Gln  Cys Val Gln Ala Ser  Ser Gln Cys Phe Gln  Ser Ala Thr
    1685             1690             1695

Asp Val  Ala Ala Phe Leu Gly  Ala Leu Ala Ser Leu  Gly Ser Leu
    1700             1705             1710

Asn Ile  Pro Tyr Lys Ile Glu  Ala Val Gln Ser Glu  Thr Val Glu
    1715             1720             1725

Pro Pro  Pro Pro Ala Gln Leu  His Phe Met Tyr Val  Ala Ala Ala
    1730             1735             1740

Ala Phe  Val Leu Leu Phe Phe  Val Gly Cys Gly Val  Leu Leu Ser
    1745             1750             1755

Arg Lys  Arg Arg Xaa Gln His  Gly Gln Leu Trp Phe  Pro Glu Gly
    1760             1765             1770

Phe Lys  Val Ser Glu Ala Ser  Lys Lys Lys Arg Arg  Glu Xaa Leu
    1775             1780             1785

Gly Glu  Asp Ser Val Gly Leu  Lys Pro Leu Lys Asn  Ala Ser Asp
    1790             1795             1800

Gly Ala  Leu Met Asp Asp Asn  Gln Asn Glu Trp Gly  Asp Glu Asp
    1805             1810             1815

Leu Glu  Thr Lys Lys Phe Arg  Phe Glu Glu Pro Val  Val Leu Pro
    1820             1825             1830

Asp Leu  Asp Asp Gln Thr Asp  His Arg Gln Trp Thr  Gln Gln His
    1835             1840             1845

Leu Asp  Ala Ala Asp Leu Arg  Met Ser Ala Met Ala  Pro Thr Pro
    1850             1855             1860

Pro Gln  Gly Glu Val Asp Ala  Asp Cys Met Asp Val  Asn Val Arg
    1865             1870             1875

Gly Pro  Asp Gly Phe Thr Pro  Leu Met Ile Ala Ser  Cys Ser Gly
    1880             1885             1890
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Gly Gly Leu Glu Thr Gly Asn Ser Glu Glu Glu Glu Asp Ala Pro
    1895   1900   1905

Ala Val Ile Ser Asp Phe Ile Tyr Gln Gly Ala Ser Leu His Asn
    1910   1915   1920

Gln Thr Asp Arg Thr Gly Glu Thr Ala Leu His Leu Ala Ala Arg
    1925   1930   1935

Tyr Ser Arg Ser Asp Ala Ala Lys Arg Leu Leu Glu Ala Ser Ala
    1940   1945   1950

Asp Ala Asn Ile Gln Asp Asn Met Gly Arg Thr Pro Leu His Ala
    1955   1960   1965

Ala Val Ser Ala Asp Ala Gln Gly Val Phe Gln Ile Leu Ile Arg
    1970   1975   1980

Asn Arg Ala Thr Asp Leu Asp Ala Arg Met His Asp Gly Thr Thr
    1985   1990   1995

Pro Leu Ile Leu Ala Ala Arg Leu Ala Val Glu Gly Met Leu Glu
    2000   2005   2010

Asp Leu Ile Asn Ser His Ala Asp Val Asn Ala Val Asp Asp Leu
    2015   2020   2025

Gly Lys Ser Ala Leu His Trp Ala Ala Ala Val Asn Asn Val Asp
    2030   2035   2040

Ala Ala Val Val Leu Leu Lys Asn Gly Ala Asn Lys Asp Met Gln
    2045   2050   2055

Asn Asn Arg Glu Glu Thr Pro Leu Phe Leu Ala Ala Arg Glu Gly
    2060   2065   2070

Ser Tyr Glu Thr Ala Lys Val Leu Leu Asp His Phe Ala Asn Arg
    2075   2080   2085

Asp Ile Thr Asp His Met Asp Arg Leu Pro Arg Asp Ile Ala Gln
    2090   2095   2100

Glu Arg Met His His Asp Ile Val Arg Leu Leu Asp Glu Tyr Asn
    2105   2110   2115

Leu Val Arg Ser Pro Gln Leu His Gly Ala Pro Leu Gly Gly Thr
    2120   2125   2130

Pro Thr Leu Ser Pro Pro Leu Cys Ser Pro Asn Gly Tyr Leu Gly

Ser Leu Lys Pro Gly Val Gln Gly Lys Lys Val Arg Lys Pro Ser
    2150   2155   2160

Ser Lys Gly Leu Ala Cys Gly Ser Lys Glu Ala Lys Asp Leu Lys
    2165   2170   2175

Ala Arg Arg Lys Lys Ser Gln Asp Gly Lys Gly Cys Leu Leu Asp
    2180   2185   2190

Ser Ser Gly Met Leu Ser Pro Val Asp Ser Leu Glu Ser Pro His
    2195   2200   2205

Gly Tyr Leu Ser Asp Val Ala Ser Pro Pro Leu Leu Pro Ser Pro
    2210   2215   2220

Phe Gln Gln Ser Pro Ser Val Pro Leu Asn His Leu Pro Gly Met
    2225   2230   2235

Pro Asp Thr His Leu Gly Ile Gly His Leu Asn Val Ala Ala Lys
    2240   2245   2250

Pro Glu Met Ala Ala Leu Gly Gly Gly Gly Arg Leu Ala Phe Glu
    2255   2260   2265

Thr Gly Pro Pro Arg Leu Ser His Leu Pro Val Ala Ser Gly Thr
    2270   2275   2280

Ser Thr Val Leu Gly Ser Ser Ser Gly Gly Ala Leu Asn Phe Thr
    2285   2290   2295

Val Gly Gly Ser Thr Ser Leu Asn Gly Gln Cys Glu Trp Leu Ser
    2300   2305   2310

Arg Leu Gln Ser Gly Met Val Pro Asn Gln Tyr Asn Pro Leu Arg
    2315   2320   2325

Gly Ser Val Ala Pro Gly Pro Leu Ser Thr Gln Ala Pro Ser Leu
    2330   2335   2340

Gln His Gly Met Val Gly Pro Leu His Ser Ser Leu Ala Ala Ser
    2345   2350   2355

Ala Leu Ser Gln Met Met Ser Tyr Gln Gly Leu Pro Ser Thr Arg
    2360   2365   2370

Leu Ala Thr Gln Pro His Leu Val Gln Thr Gln Gln Val Gln Pro
    2375   2380   2385

Gln Asn Leu Gln Met Gln Gln Gln Asn Leu Gln Pro Ala Asn Ile
    2390   2395   2400

Gln Gln Gln Gln Ser Leu Gln Pro Pro Pro Pro Pro Pro Gln Pro
    2405   2410   2415

His Leu Gly Val Ser Ser Ala Ala Ser Gly His Leu Gly Arg Ser
    2420   2425   2430

Phe Leu Ser Gly Glu Pro Ser Gln Ala Asp Val
    2435   2440

<210> 7
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> Amino acid sequence surrounding the transmembrane domains of APP

<400> 7

Ser Asn Lys Gly Ala Ile Ile Gly Leu Met Val Gly Gly Val Val Ile
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Ala Thr Val Ile Val Ile Thr Leu Val Met Leu Lys Lys Lys
            20   25   30

<210> 8
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> Sequence surrounding the transmembrane domains of E-cathedrin

<400> 8

Ile Pro Glu Trp Leu Ile Ile Leu Ala Ser Leu Leu Leu Ala Leu Ala
1   5   10   15

Leu Ile Leu Ala Val Cys Ile Ala Val Asn Ser Arg Arg Arg
            20   25   30

<210> 9
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> Sequence surrounding the transmembrane domains of Notch-1

<400> 9

Pro Ser Gln Leu His Leu Met Tyr Val Ala Ala Ala Ala Phe Val Leu

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1                 5                    10                      15
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Leu Phe Phe Val Gly Cys Gly Val Leu Leu Ser Arg Lys Arg
            20   25   30

<210> 10
<211> 158
<212> PRT
<213> Artificial sequence

<220>
<223> Sequence surrounding the transmembrane domains of Notch-1

<400> 10

Asn Ile Pro Tyr Lys Ile Glu Ala Val Lys Ser Glu Pro Val Glu Pro
1   5   10   15

Pro Leu Pro Ser Gln Leu His Leu Met Tyr Val Ala Ala Ala Ala Phe
            20   25   30

Val Leu Leu Phe Phe Val Gly Cys Gly Val Leu Leu Ser Arg Lys Arg
        35   40   45

Arg Arg Gln His Gly Gln Leu Trp Phe Pro Glu Gly Phe Lys Val Ser
    50   55   60

Glu Ala Ser Lys Lys Lys Arg Arg Glu Pro Leu Gly Glu Asp Ser Val
65   70   75   80

Gly Leu Lys Pro Leu Lys Asn Ala Ser Asp Gly Ala Leu Met Asp Asp
            85   90   95

Asn Gln Asn Glu Trp Gly Asp Glu Asp Leu Glu Thr Lys Lys Phe Arg
            100   105   110

Phe Glu Glu Pro Val Val Leu Pro Asp Leu Ser Asp Gln Thr Asp His
        115   120   125

Arg Gln Trp Thr Gln Gln His Leu Asp Ala Ala Asp Leu Arg Met Ser
    130   135   140

Ala Met Ala Pro Thr Pro Pro Gln Gly Glu Val Asp Ala Asp
145   150   155

<210> 11
<211> 8
<212> PRT
<213> Artificial sequence

<220>
<223> C-terminal flag sequence

<400> 11

Asp Tyr Lys Asp Asp Asp Asp Lys
1   5

<210> 12
<211> 16
<212> PRT
<213> Artificial sequence

<220>
<223> Flag/8 his tag

<400> 12

Asp Tyr Lys Asp Asp Asp Asp Lys His His His His His His His His
1   5   10   15

<210> 13
<211> 1665
<212> DNA
<213> Artificial sequence

<220>
<223> Nucleic acid encoding NusA

<400> 13

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gagaagattt tcgaagcatt ggaaagcgcg ctggcgacag caacaaagaa aaaatatgaa     120

caagagatcg acgtccgcgt acagatcgat cgcaaaagcg gtgattttga cactttccgt     180

cgctggttag ttgttgatga agtcacccag ccgaccaagg aaatcaccct tgaagccgca     240

cgttatgaag atgaaagcct gaacctgggc gattacgttg aagatcagat tgagtctgtt     300

acctttgacc gtatcactac ccagacggca aaacaggtta tcgtgcagaa agtgcgtgaa     360

gccgaacgtg cgatggtggt tgatcagttc cgtgaacacg aaggtgaaat catcaccggc     420

gtggtgaaaa aagtaaaccg cgacaacatc tctctggatc tgggcaacaa cgctgaagcc     480

gtgatcctgc gcgaagatat gctgccgcgt gaaaacttcc gccctggcga ccgcgttcgt     540

ggcgtgctct attccgttcg cccggaagcg cgtggcgcgc aactgttcgt cactcgttcc     600

aagccggaaa tgctgatcga actgttccgt attgaagtgc agaaatcgg cgaagaagtg      660

attgaaatta aagcagcggc tcgcgatccg ggttctcgtg cgaaaatcgc ggtgaaaacc     720

aacgataaac gtatcgatcc ggtaggtgct tgcgtaggta tgcgtggcgc gcgtgttcag     780

gcggtgtcta ctgaactggg tggcgagcgt atcgatatcg tcctgtggga tgataacccg     840

gcgcagttcg tgattaacgc aatggcaccg gcagacgttg cttctatcgt ggtggatgaa     900

gataaacaca ccatggacat cgccgttgaa gccggtaatc tggcgcaggc gattggccgt     960

aacggtcaga acgtgcgtct ggcttcgcaa ctgagcggtt gggaactcaa cgtgatgacc    1020

gttgacgacc tgcaagctaa gcatcaggcg gaagcgcacg cagcgatcga caccttcacc    1080
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aaatatctcg acatcgacga agacttcgcg actgttctgg tagaagaagg cttctcgacg    1140

ctggaagaat tggcctatgt gccgatgaaa gagctgttgg aaatcgaagg ccttgatgag    1200

ccgaccgttg aagcactgcg cgagcgtgct aaaaatgcac tggccaccat tgcacaggcc    1260

caggaagaaa gcctcggtga taacaaaccg gctgacgatc tgctgaacct tgaagggggta   1320

gatcgtgatt tggcattcaa actggccgcc cgtggcgttt gtacgctgga agatctcgcc    1380

gaacagggca ttgatgatct ggctgatatc gaagggttga ccgacgaaaa agccggagca    1440

ctgattatgg ctgcccgtaa tatttgctgg ttcggtgacg aagcgactag tggttctggt    1500

catcaccatc accatcactc cgcgggtaaa gaaaccgctg ctgcgaaatt tgaacgccag    1560

cacatggact cgccaccgcc aactggtctg gtccccggg gcagcgcggg ttctggtacg     1620

attgatgacg acgacaagag tccgggagct cgtggatccg aattc                    1665
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<210>   14
<211>   555
<212>   PRT
<213>   Artificial sequence

<220>
<223>   Protein sequence encoding NusA

<400>   14

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Met Asn Lys Glu Ile Leu Ala Val Val Glu Ala Val Ser Asn Glu Lys
1               5                   10                  15


Ala Leu Pro Arg Glu Lys Ile Phe Glu Ala Leu Glu Ser Ala Leu Ala
            20                  25                  30


Thr Ala Thr Lys Lys Lys Tyr Glu Gln Glu Ile Asp Val Arg Val Gln
            35                  40                  45


Ile Asp Arg Lys Ser Gly Asp Phe Asp Thr Phe Arg Arg Trp Leu Val
        50                  55                  60


Val Asp Glu Val Thr Gln Pro Thr Lys Glu Ile Thr Leu Glu Ala Ala
65                  70                  75                  80


Arg Tyr Glu Asp Glu Ser Leu Asn Leu Gly Asp Tyr Val Glu Asp Gln
                85                  90                  95


Ile Glu Ser Val Thr Phe Asp Arg Ile Thr Thr Gln Thr Ala Lys Gln
                100                 105                 110


Val Ile Val Gln Lys Val Arg Glu Ala Glu Arg Ala Met Val Val Asp
        115                 120                 125


Gln Phe Arg Glu His Glu Gly Glu Ile Ile Thr Gly Val Val Lys Lys
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130   135   140

Val Asn Arg Asp Asn Ile Ser Leu Asp Leu Gly Asn Asn Ala Glu Ala
145   150   155   160

Val Ile Leu Arg Glu Asp Met Leu Pro Arg Glu Asn Phe Arg Pro Gly
                165   170   175

Asp Arg Val Arg Gly Val Leu Tyr Ser Val Arg Pro Glu Ala Arg Gly
                180   185   190

Ala Gln Leu Phe Val Thr Arg Ser Lys Pro Glu Met Leu Ile Glu Leu
                195   200   205

Phe Arg Ile Glu Val Pro Glu Ile Gly Glu Glu Val Ile Glu Ile Lys
    210   215   220

Ala Ala Ala Arg Asp Pro Gly Ser Arg Ala Lys Ile Ala Val Lys Thr
225   230   235   240

Asn Asp Lys Arg Ile Asp Pro Val Gly Ala Cys Val Gly Met Arg Gly
                245   250   255

Ala Arg Val Gln Ala Val Ser Thr Glu Leu Gly Gly Glu Arg Ile Asp
                260   265   270

Ile Val Leu Trp Asp Asp Asn Pro Ala Gln Phe Val Ile Asn Ala Met
    275   280   285

Ala Pro Ala Asp Val Ala Ser Ile Val Val Asp Glu Asp Lys His Thr
    290   295   300

Met Asp Ile Ala Val Glu Ala Gly Asn Leu Ala Gln Ala Ile Gly Arg
305   310   315   320

Asn Gly Gln Asn Val Arg Leu Ala Ser Gln Leu Ser Gly Trp Glu Leu
                325   330   335

Asn Val Met Thr Val Asp Asp Leu Gln Ala Lys His Gln Ala Glu Ala
                340   345   350

His Ala Ala Ile Asp Thr Phe Thr Lys Tyr Leu Asp Ile Asp Glu Asp
    355   360   365

Phe Ala Thr Val Leu Val Glu Glu Gly Phe Ser Thr Leu Glu Glu Leu
    370   375   380

Ala Tyr Val Pro Met Lys Glu Leu Leu Glu Ile Glu Gly Leu Asp Glu
385   390   395   400

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Pro Thr Val Glu Ala Leu Arg Glu Arg Ala Lys Asn Ala Leu Ala Thr
              405             410             415

Ile Ala Gln Ala Gln Glu Glu Ser Leu Gly Asp Asn Lys Pro Ala Asp
              420             425             430

Asp Leu Leu Asn Leu Glu Gly Val Asp Arg Asp Leu Ala Phe Lys Leu
              435             440             445

Ala Ala Arg Gly Val Cys Thr Leu Glu Asp Leu Ala Glu Gln Gly Ile
     450             455             460

Asp Asp Leu Ala Asp Ile Glu Gly Leu Thr Asp Glu Lys Ala Gly Ala
465             470             475             480

Leu Ile Met Ala Ala Arg Asn Ile Cys Trp Phe Gly Asp Glu Ala Thr
              485             490             495

Ser Gly Ser Gly His His His His His Ser Ala Gly Lys Glu Thr
              500             505             510

Ala Ala Ala Lys Phe Glu Arg Gln His Met Asp Ser Pro Pro Pro Thr
              515             520             525

Gly Leu Val Pro Arg Gly Ser Ala Gly Ser Gly Thr Ile Asp Asp Asp
     530             535             540

Asp Lys Ser Pro Gly Ala Arg Gly Ser Glu Phe
545             550             555
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